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The Fight Against CATTLE FEVER TICKS



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Dipping cattle to kill fever ticks. ⬆

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Animal heavily infested with cattle fever ticks. ➡

The Fight Against **CATTLE FEVER TICKS**

Cattle fever ticks may spread bovine piroplasmosis—a severe and often fatal disease of cattle. It also is known as cattle tick fever, southern cattle fever, red water, splenic fever, and Texas fever.

In infested cattle that do not get tick fever, cattle ticks produce general unthriftiness. Sometimes they spread other cattle diseases.

Cattle tick fever has caused enormous losses in the past. Before a nationwide eradication program began in 1906, the disease took a \$40 million toll in American cattle each year. If piroplasmosis had not been eradicated from the United States, the cattle industry's losses from ticks probably would amount to \$1 billion annually.

Cattle fever ticks infest most tropical and subtropical areas of the Western Hemisphere. They frequently are found in the part of Texas that borders on infested parts of Mexico, and occasionally are found in California. Florida had outbreaks of cattle ticks in the 1950's and in 1960.



ERADICATION PROGRAM

Today the United States wages an active fight against these ticks. If ticks are found, eradication begins immediately. Cooperative State-Federal programs provide quarantines, inspections, and treatment. Cattle owners are alerted to watch for ticks and submit specimens for identification.

Infested and exposed cattle are dipped in chemicals that kill ticks. Although a single treatment should kill the ticks on an animal, it will not assure eradication because it does not prevent reinfestation. Only long-range programs can rid an area of ticks. For this reason, cattle are dipped at regular intervals for 1 year.

Prevention—keeping ticks out of the United States—is a major part of the program against cattle fever ticks. A quarantine zone is maintained on the U.S. side of the lower Rio Grande River. Cattle from Mexico are carefully inspected for ticks at the border. They must be free of ticks and must be given a precautionary dipping before they can be imported.

Without these controls, cattle fever ticks would reinfest areas of the United States that have warm climates.

EARLY CONTROL MEASURES

For almost 150 years, much of the southern and southwestern United States was infested with cattle fever ticks. Tick fever caused great losses to cattlemen year after year.

Research, which began in the 1880's, proved that the disease is transmitted by the cattle tick. This discovery was a milestone in the conquest of disease—it showed for the first time that infection could be spread from one animal to another by an insectlike carrier, or vector.

A Federal quarantine line was set up in 1891 to stop movement of infested cattle to tick-free areas. Scientists developed a treatment to kill ticks.

The treatment—dipping—was so successful that it became the basis for eradication. In 1906 Congress provided money, and a national campaign was initiated by 15 States and the U.S. Department of Agriculture.

Infested cattle were systematically dipped. Infested areas were quarantined to stop the spread of the parasites. Import regulations were tight-

ened to prevent the introduction of additional ticks. This cooperative program was successfully completed in 1943.

In spite of continued efforts to keep the United States free of these parasites, cattle fever ticks have reappeared from time to time. But vigilance and prompt eradication measures have prevented recurrence of cattle fever.

HOW TICKS LIVE

Cattle fever ticks¹ spend the early part of their lives on the ground. Then they infest cattle, or—occasionally—horses, mules, sheep, goats, or deer. Ticks must have blood from an animal host to complete their life cycles.

Moisture and temperature affect the tick's development. In spring, summer, and early fall, a tick may complete its life cycle in 6 to 10 weeks. If growth is delayed by cold, a tick may take a year to complete its life cycle. Ticks are ordinarily killed by temperatures of 12° F., and eggs are destroyed at 2°.

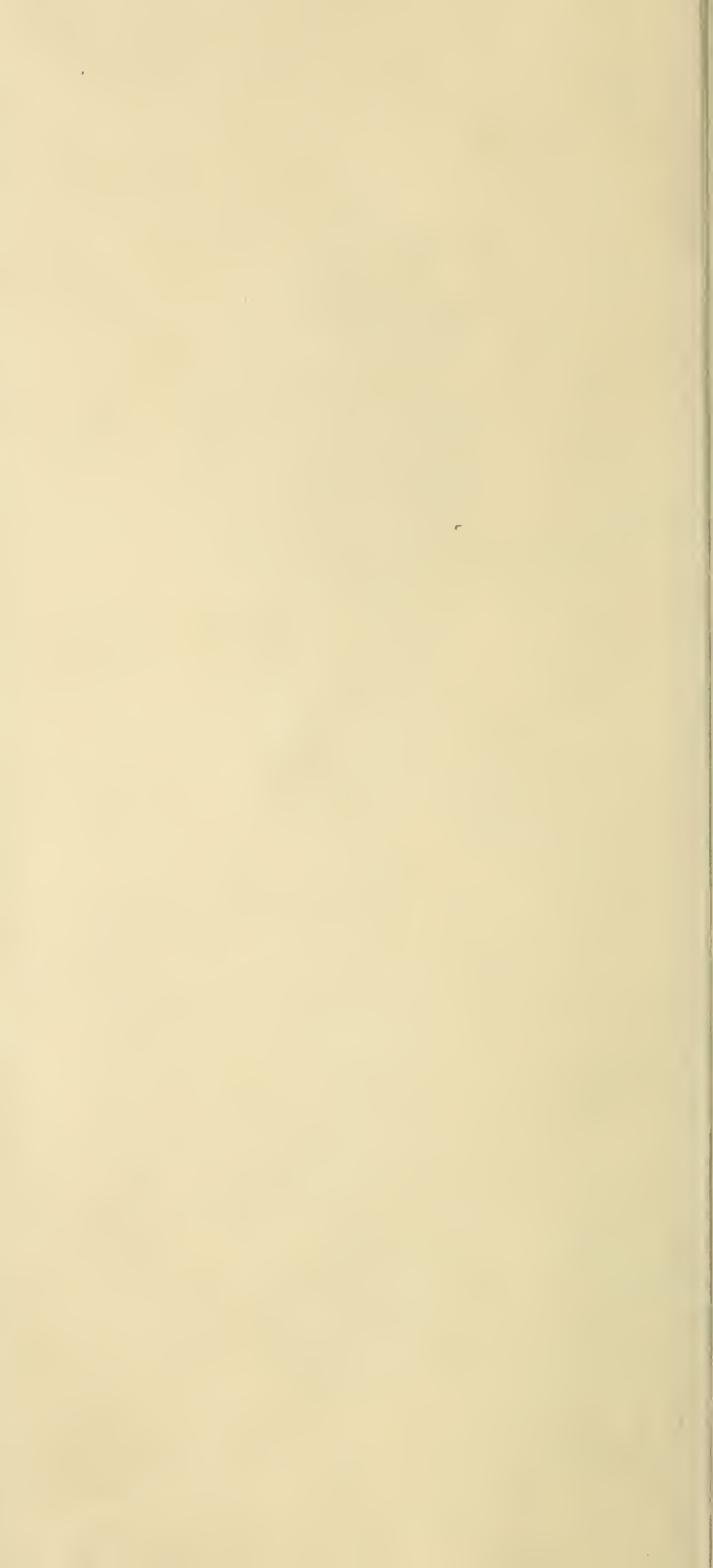
The female tick dies after laying a cluster of several thousand amber-colored eggs on the ground. In warm weather, eggs usually hatch in 13 to 42 days. They may incubate in unfavorable weather for as long as 7 months.

The newly hatched seed ticks, or larvae, are barely visible to the unaided eye. These waxy brown, six-legged ticks crawl up grass or plants, where they wait for an animal to pass by. If ticks do not find a host, they eventually die of starvation. In summer, seed ticks may starve after 3 to 4 months; in colder periods, they may survive for 6 months.

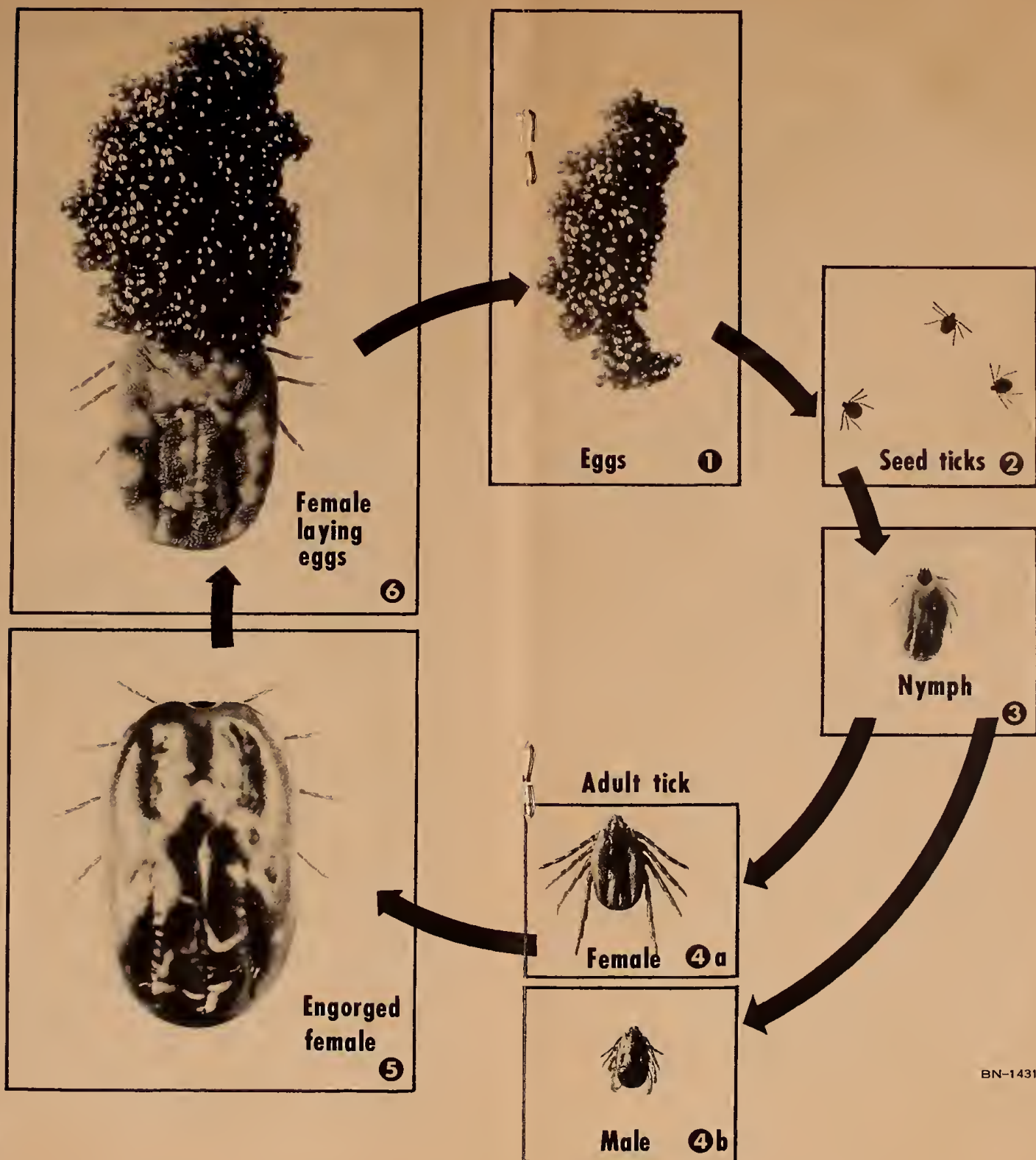
Usually seed ticks first attach themselves to soft skin inside the animal's thighs, flanks, and forelegs or along the belly and brisket. Here they suck blood, or engorge. Then these ticks molt twice: seed ticks become tiny, white, eight-legged nymphs; after engorging about a week, nymphs become adults. Many adult ticks are olive green; others are mottled yellow or olive brown.

The adult female is about $\frac{1}{10}$ inch long; the male is slightly smaller. Mature ticks mate without leaving the host animal. As the female tick engorges on blood of the host animal, she becomes $\frac{1}{4}$ to $\frac{1}{2}$ inch long. Then she drops to the ground, where she deposits her eggs.

¹ *Boophilus annulatus* and *B. microplus*.



LIFE OF A CATTLE FEVER TICK



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Ticks usually remain on cattle 3 or 4 weeks; under favorable conditions, however, the period on the animal host may be shortened to 15 days.

LOSSES FROM CATTLE TICKS

When cattle fever ticks draw blood, they take nutrients that cattle need for growth and for milk and meat production. Infested cattle develop "tick poverty" or "tick worry"—they become weak, stunted, and anemic from the continuous loss of blood. Often ticky cattle lose flesh on good pasture. Ticks can reduce the weight of a 1,000-pound steer by 200 pounds in a year. Infested animals become susceptible to other diseases or secondary infections. Ticks may reduce milk production by 25 percent.

CATTLE TICK FEVER

Cattle tick fever is caused by a blood parasite, or piroplasm, that destroys red blood cells. Infected female ticks transmit it through eggs to their offspring. Young ticks spread the piroplasm when they bite susceptible cattle.

Calves on immune dams will carry an immunity as long as they are suckling. When the disease occurs in calves less than 8 months old, it produces a mild infection that immunizes them for life. Among cattle 1 to 2 years old, death rates range from 10 to 50 percent. Unexposed cattle are most susceptible after they are 2 years old. In some outbreaks, 90 percent of the infected cattle die.

Generally, cases in summer are acute, and those in late autumn and winter are chronic.

In summer, susceptible cattle develop the disease 10 to 15 days after infected seed ticks begin feeding on them. In winter, the fever may develop as long as 90 days after such ticks infest cattle.

Cattle with the acute form of tick fever develop high temperatures (107° or 108° F.). They stand with heads lowered and backs arched. They stop eating and chewing their cuds. "Red water," or bloodstained urine, is common. Diarrhea follows constipation. Milk flow drops sharply.

Death usually occurs within 3 or 4 days after fever develops. Surviving animals are nervous and recover slowly. Infected cattle frequently have relapses 3 to 6 weeks after their temperatures return to normal.

Cattle affected with the chronic form develop a mild fever. Animals stop eating and chewing their cuds. They develop anemia and lose flesh rapidly.

The chronic form of the disease lasts for many weeks. Some deaths occur, but most animals recover gradually.

IF YOUR CATTLE HAVE TICKS

Good herd management requires the eradication of all ticks because—

- All ticks are bloodsuckers that sap the strength of animals on which they live.

- Many ticks spread other diseases, such as anaplasmosis. Disease-carrying ticks—including cattle fever ticks—may be confused with those that do not carry diseases. Some species are so similar that only a tick specialist—an acarologist, a parasitologist, or an entomologist—or a trained inspector can tell them apart.

If you suspect that your cattle have cattle fever ticks or you do not know the species infesting your cattle—

- Ask a tick inspector to identify the ticks and give you information about control or eradication.

- Or, ask your veterinarian to have the ticks identified and to give you information about control or eradication.

- Or, pick several ticks off an infested animal. Place them in a small bottle of alcohol, protect the bottle with packing material, and mail the package to Technical Services, Parasites Reference Laboratory, USDA, ARS, ANH, ARC, Beltsville, Md. 20705.

Use a separate bottle to send the ticks from each kind of animal. **Specimens from two or more kinds of animals should not be placed in the same bottle** because the ticks on a cow may be different from those on a horse or a dog—even when the ticks are all taken at the same farm or ranch.

Write a letter to accompany the ticks, giving the following information:

1. The kind of animal on which the ticks were found.
2. Location of the ticks on the host animal.

3. Locality—community, county, and State—where the ticks were found.
4. Date—month, day, and year—on which the ticks were found.
5. Name and mailing address of the collector.

Add any other information you may have about the ticks you send for identification.

You may obtain information about tick control by writing to the U.S. Department of Agriculture, Washington, D.C. 20250.

HOW THE PROGRAM WORKS

When cattle fever ticks are identified, cooperative State-Federal eradication programs are launched immediately.

The eradication program includes inspection of cattle for ticks, quarantine of cattle in infested areas, and systematic dipping of infested animals and exposed herds for a prolonged period.

All susceptible animals must be carefully inspected for ticks before each dipping. Each suspect animal should be chute restrained so an experienced person can make a dry-scratch inspection. State and Federal inspectors regularly examine cattle throughout the infested area until all ticks are eradicated.

Quarantines regulate the movement of cattle, horses, mules, and asses—as well as trucks, cars, bedding, or other contaminated materials—from infested areas.

Chemical dips—when properly used—kill ticks on animals without injuring the animals. You may obtain the names of the permitted dips from your veterinarian, State or Federal disease-control officials, or the Federal veterinarian in charge in your State.

Cattle are dipped in permanent vats on infested premises or at stockyards, sales barns, or border stations. Dipping is supervised by State or Federal inspectors.

Dipping kills ticks that are on cattle at the time of treatment. If the dipping interval is short enough, no tick will have sufficient time to mature, feed, and drop off the host animal between dippings. A tick cannot mature in less than 15 days on the host, and if all susceptible animals on infested premises are dipped at intervals of less than 15 days, no mature engorged ticks will fall to the

ground and lay eggs. Properly dipped cattle act merely as collectors that bring ticks to the dipping vat; they cannot reinfest pastures, farms, and ranges.

A 14-day dipping schedule, therefore, breaks the tick's life cycle and prevents new infestations.

To insure successful eradication, however, dipping at the 14-day interval should continue at least 1 year after the last cattle fever tick has been found.

Dipping at longer intervals has proved very costly. During the early years of eradication, a 14- to 21-day dipping interval was permitted and an 18-day schedule was widely adopted.

Experience quickly proved this wrong: premises were not freed of ticks when cattle were dipped every 18 days. When dipping and dry-scratch inspections were repeated at 14-day intervals for 1 year, ticks were eradicated.

Every animal in every infested and exposed herd must be treated. All animals must be completely submerged in the bath. Very young animals should be dipped individually. Give them careful treatment by hand. Handle them so that they will not swallow dip.

All animals should be carefully and humanely handled. Water and feed them 4 or 5 hours before dipping; allow them to remain quiet after dipping.

As animals leave the vat, they are identified with a uniformly placed paint mark.

For further information about dipping, contact your local veterinarian, or State or Federal disease-control officials.

PRECAUTIONS

Dips used improperly can be injurious to man and animals. They should be used only at recommended concentrations under carefully controlled conditions. Animals that swallow dip may be poisoned.

Use dips only when needed. Follow the directions and heed all precautions on the labels. Handle dip chemicals with care.

Have standard antidotes against poisoning available before dipping operations begin. If anyone swallows the dip, use the antidote as directed on the label. Call a physician at once.

Avoid unnecessary or prolonged soaking of skin or clothing during dipping. If you spill any dip on your skin, wash it off immediately with soap and water. Call a physician if contact is prolonged or if the contaminated area is extensive.

If you spill dip on your clothing, remove contaminated clothing immediately and wash the contaminated skin thoroughly. Launder the clothing before wearing it again.

After handling a dip, do not eat, drink, or smoke until you have washed your hands and face. Wash any exposed skin immediately after working with a dip.

Keep animals away from the vat except when they are being treated.

Do not drain vats into streams or places where livestock and fish or wildlife may come in contact with the discarded chemicals.

Keep dip chemicals in closed, well-labeled containers in a dry place. Store them where they will not contaminate food or feed, and where children and animals cannot reach them.

Do not mix or combine different dip chemicals. Do not put a dip chemical in an empty container which formerly contained a different chemical.

Dispose of empty chemical containers at a sanitary land-fill dump, and crush or bury them at least 18 inches deep in a level, isolated place where they will not contaminate water supplies. If you have trash-collection service, wrap small containers in several layers of newspaper and place them in a trash can.

Prepared by

Animal Health Division

Agricultural Research Service



Use Pesticides Safely
FOLLOW THE LABEL

U.S. DEPARTMENT OF AGRICULTURE



Hyattsville, Md. 20782

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